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ABSTRACT

Nonverbal learning disorders are less common than the typical language-based learning disabilities identified by school staff. Appropriate intervention is highly dependent on the accurate diagnosis of this disorder. Emphasis on performance and behavior management often obscures the etiology of a child's difficulties and leads to ineffective treatment approaches. The differential diagnosis can be confusing. As a result, many children do not receive adequate intervention and teachers are unable to develop appropriate techniques for their education and management. It is important to understand the cognitive, academic, and neuropsychological characteristics of students with non-verbal learning disorders and how these attributes translate into behavior and performance in the classroom. The focus of this paper is to clarify the diagnosis of nonverbal learning disorders, differentiate them from other learning disorders, and introduce effective educational intervention strategies. The acquisition of this knowledge will enable school psychologists, teachers, parents, and clinicians to understand the characteristics of a child with a nonverbal learning disorder, identify these children earlier, and initiate effective remedial programs. (Author/JDM)

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Diagnosis and Management of Nonverbal Learning Disorders

Historically, school psychologists have been encouraged to identify learning disabled students in a general way, emphasizing the discrepancy between cognitive ability and academic performance. There has been little focus on the nature and clinical assessment of the specific disability. With new practices emerging, it is imperative to develop a knowledge base that allows interpretation of the diagnostic information presented, and results in the development of appropriate and effective intervention strategies.

Language-based learning disabilities comprise the majority of disabilities identified and are reflected in the development and expression of reading and writing skills. A subtype of learning disorders referred to as "nonverbal learning disabilities" includes approximately 20% of learning disabled students. Nonverbal learning disorders are not well understood and the differential diagnosis can be confusing. As a result many children do not receive adequate intervention.

Individuals with nonverbal learning disabilities display strengths in verbal and auditory skills but may have profound deficits in visual perception, visual motor coordination, and spatial organization. Academic difficulties are noted in math computation and reasoning, science, writing, and reading comprehension. The mechanisms that result in these deficits are quite different for nonverbal learning disabilities than for language-based disabilities, therefore, the strategies needed for remediation also differ. Due to the inability to accurately read nonverbal social cues, overreliance on verbal expression, impaired appreciation of humor, and spatial disorientation, children with these disorders may have related problems with social skills and psychological adjustment.

Adequate treatment, from a psychiatric as well as academic viewpoint, depends highly on accurate diagnosis. There is a significant correlation between these learning disorders and specific types of developmental disorders. Clinical staff may tend to identify the psychiatric or developmental difficulties with little attention to the educational ramifications. It is also evident that school staff focus on the academic and social deficiencies with inadequate treatment of the underlying developmental disorder. Collaboration between those involved in treatment is necessary to bridge this gap and provide the most effective treatment plan. In order for this to be accomplished, it is critical for school psychologists to have a thorough understanding of the characteristics of nonverbal learning disorders as well as the categories of developmental disorders (as per DSM-IV). This knowledge will bolster the collaborative effort and provide the basis for effective communication.

Most individuals with nonverbal learning disabilities demonstrate strengths in areas that rely on auditory processing and language ability. These individuals tend to exhibit verbal fluency, a strong rote verbal capacity, and well-developed auditory memory. This may be demonstrated by the ability to produce descriptions, which sound like memorization of large tracts of the encyclopedia or movie dialog. Attention to verbal information may be acute and receptive language tends to be well developed. These areas of strength may produce the effect of verbal precocity when in fact, the skills tend to be rote in nature and do not reflect any depth of comprehension.

Cognitive weaknesses are noted in visual perceptual and spatial skills. A child with NVLD may be noted to have difficulty with attention to visually presented information, nonverbal memory and concept formation. Nonverbal reasoning tasks may appear confusing and there is difficulty processing novel visual stimuli accurately. Visuo-spatial organizational skills are weak. These weaknesses translate to difficulty with a wide variety of tasks. Individuals speak of problems ranging from difficulty reading maps, driving, and operating appliances, to an inability to manage their time, remember faces, or organize materials.

Inherent in NVLD is also a weakness in understanding the intent of visual information. The expression of facial and body language may be meaningless. There may be little appreciation

of physical humor although puns and word play are well understood. The individual with NVLD may violate the boundaries and personal space of others. While a stern look on the face of a parent may elicit a particular behavior or cessation of behavior in a non-disabled child, the child with nonverbal problems may fail not only to understand the look but may also fail to even notice the expression. This leads to identification of defiance in a child who simply does not comprehend and may be mystified when punishment ensues.

Difficulties in the development of social skills and relationships are common. Nonverbal cues are essential to effective communication. Failure to comprehend the meaning of these cues alters our understanding of the intent of the communication. Individuals with NVLD are noted to display inappropriate social behaviors, which may include interruption of conversation, abrupt changes of topic, and failure to respond to the communication of others. Excessive talking is common and reciprocal conversation is impaired. An individual may fail to make eye contact or walk away from the speaker. If there is some development of social skills, the individual may make eye contact, speak about a subject of interest to him/her, wait while the other person is speaking, and then return to a monologue without responding to the speaker's statement. Pragmatic use of language may be impaired.

Academically, NVLD translates to difficulty with reading comprehension, mathematical reasoning and computation, science and writing. Strengths may be seen in decoding, spelling, and content subjects which require retention of factual information presented orally. Although the acquisition of fine motor skills may initially be difficult, the rote skills are eventually secured and this becomes a strength. The more complex skills necessary for written language however, are difficult to master and may continue to be problematic.

Difficulties with reading comprehension appear to be related to weakness in visual imagery. Strong visual imagery allows us to connect to incoming language and link it to prior knowledge. It assists in the process of accessing background experiences. Imagery also enhances the ability to store information in memory. Individuals with NVLD have difficulty producing visual images in response to verbal input. Normally functioning individuals produce these images without effort. As one hears a story for example, the mental visual scene shifts in response to changes in the narrative. Therefore, it is not necessary to recall all

the verbal detail. One need only "view" the shifting image. A child with NVLD and deficits in visual imagery may frantically attempt to remember the verbal sequence of information and quickly becomes lost in the rush of information presented. Without the visual image to accompany the verbiage, recall is compromised and this impacts negatively on comprehension.

Difficulties with visual imagery then are characterized by poor comprehension in the presence of excellent decoding ability. This produces a situation where the individual may appear to be a competent reader; however, understanding and recall is limited. The child may be able to fluently read well beyond the level of understanding. Frequent rereading is noted. Although this may enhance comprehension of a portion of the text, it interferes with continuity of thought.

Math, which is essentially comprised of spatial tasks, also presents difficulty and often is the primary academic deficit. Not only are the spatial concepts difficult to understand, but the mode instruction further inhibits learning. Unlike many academic tasks that rely on oral presentation, math is generally taught through demonstration, particularly at the primary levels. Manipulatives are used to display the computations and the student is asked to solve the problem by demonstration. While rarely heard in other classes, math teachers are frequently noted to say, "Let me show you how to do this problem."

Difficulties in math can be found at several levels. There may be an inability to grasp the basic concepts and reasoning involved. The student may have difficulty with number formation and organization on paper. Their work is characterized by various sizes of numbers, inaccurate vertical alignment, and slanted horizontal positioning. Students may also struggle with computational skills and be unable to recall a series of steps. Finally, the student may have difficulty with the fine motor and motor planning skills necessary for completion of the problems.

As students continue in school, reading skills are put to practical use in content areas. Students with NVLD tend to have difficulty with classes in the general area of science. Biology, botany, zoology, anatomy and similar areas involve the discrimination, recall, and

integration of visual images. Physics and chemistry involve visual processing skills as well as upper level math. Of course, difficulties are prevalent in classes such as art, physical education and drama.

As a result of the NVLD, individuals may display behaviors that alienate them from others. There may be an over-reliance on talk. It may be necessary for them to "talk themselves" through tasks in a way which irritates other students. Thinking may become rigid with intense focus on detail. Poor comprehension of nonverbal cues impairs understanding. These deficiencies may lead to problems in the development of satisfactory peer relationships. A reliance and dependency on adults with whom they tend to relate more effectively may develop. Poor motor coordination limits participation in sports or the typical outdoor play of other children.

Although NVLD is not easily or quickly remediated, there are strategies that help the student cope and learn. The key to remediation is the use of language. Individualized instruction that relies on verbal strengths is essential. Teaching verbal self-direction can be of significant value. Analyzing tasks and clarifying concepts in a verbal format is necessary. Teachers must always accompany demonstration and visual information with extensive verbal instruction and description. The student with difficulties in visual imaging may benefit from direct instruction in building visual images beginning with actual pictures of events taking place in the text. Children with communication problems may need direct instruction in the rules of conversation and pragmatic language.

When considering the possibility of NVLD in a student, it is important to rule out other possible causes of the difficulties seen. Depression, anxiety, or obsessive compulsive disorders can mimic some of the manifestations of NVLD. The presence of a psychotic process must be considered. Assessment should also focus on attention problems, developmental disorders, and substance abuse. Although there is a significant overlap of NVLD with developmental disorders such as Pervasive Developmental Disorder and Asperger's Syndrome, NVLD can exist in isolation, therefore the symptoms do not mandate the diagnosis of a developmental disorder. Careful assessment, often involving multiple professionals, is necessary to make these distinctions.

Students with NVLD struggle on multiple levels. Academic, cognitive, communication, and social skills may all be affected to various degrees. The social isolation and withdrawal that some individuals face can lead to a higher incidence of depression, anxiety, and frustration. In an attempt to cope, the student may become even more rigid and less available to intervention efforts. Early intervention is therefore critical before the secondary issues of psychological maladjustment develop. It is only the collaborative and often intense effort of teachers, parents, and clinicians that allows the development of an effective remedial program for individuals with NVLD.

Abstract

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Diagnosis and Management of Nonverbal Learning Disorders

Nonverbal learning disorders are far less common than the typical language based learning disability identified by school staff. Appropriate intervention is highly dependent on the accurate diagnosis of the disorder. Emphasis on performance and behavior management often obscures the etiology of a child's difficulties and leads to ineffective treatment approaches. Nonverbal learning disorders are not well understood and the differential diagnosis can be confusing. As a result, many children do not receive adequate intervention and teachers are unable to develop appropriate techniques for the education and management of these children. It is important to understand the cognitive, academic and neuropsychological characteristics of students with non-verbal learning disorders and how these attributes are translated into behavior and performance in the classroom. The focus of this paper is to clarify the diagnosis of nonverbal learning disorders, differentiate them from other learning disorders, and introduce effective educational intervention strategies. The acquisition of this knowledge will enable school psychologists, as well as teachers, parents, and clinicians, to understand the characteristics of a child with a nonverbal learning disorder, identify these children earlier, and initiate effective remedial programs.

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